



Policy and Governance Approaches to Strengthen Water and Food Safety Regulations for Typhoid Control in Uganda

Obwendo N. J.

Faculty of Medicine Kampala International University Uganda

ABSTRACT

Typhoid fever remains a major public health concern in Uganda, exacerbated by inadequate water quality, poor sanitation, and weak food safety regulations. Despite existing policies and regulatory frameworks, enforcement challenges, insufficient infrastructure, and limited public awareness continue to hinder effective disease prevention. This review examines Uganda's current governance structures for water and food safety, highlighting gaps in policy enforcement and inter-agency coordination. It explores the role of public awareness, infrastructure development, and regulatory compliance in mitigating typhoid prevalence. Key recommendations include strengthening regulatory enforcement, enhancing inter-agency collaboration, expanding public-private partnerships, and investing in community-based hygiene interventions. Additionally, the review emphasizes the need for improved disease surveillance systems and innovative policy reforms to enhance water and food safety governance. Addressing these governance challenges will not only help reduce typhoid incidence but also contribute to Uganda's broader public health and sustainable development goals.

Keywords: Typhoid fever, water safety, food safety, sanitation, regulatory frameworks, Uganda.

INTRODUCTION

Typhoid fever is a serious public health concern, particularly in low- and middle-income countries where inadequate sanitation, poor hygiene, and unsafe drinking water are prevalent [1]. The disease, caused by *Salmonella enterica* serovar *Typhi*, spreads primarily through the ingestion of contaminated food and water. In many developing countries, including Uganda, recurrent typhoid outbreaks highlight the persistent challenges in water and food safety governance [2]. Despite governmental and international efforts to curb its spread, the disease remains endemic, with urban slums and rural communities being the most vulnerable [3]. Uganda has faced multiple typhoid outbreaks in recent years, particularly in densely populated urban areas such as Kampala, where sanitation infrastructure is inadequate, and clean water access is inconsistent [4]. The 2015 typhoid outbreak in Kampala, for example, led to thousands of infections and several deaths, drawing attention to the urgent need for improved water and food safety measures [2]. While the Ugandan government has initiated various water and sanitation projects, challenges such as policy enforcement, weak governance structures, and limited public awareness continue to impede progress [5]. This review seeks to explore the existing regulatory frameworks governing water and food safety in Uganda and propose governance improvements that could mitigate the prevalence of typhoid fever. Typhoid fever remains a major global health issue, with an estimated 9 to 14 million cases reported annually, leading to approximately 135,000 deaths worldwide. Sub-Saharan Africa, including Uganda, bears a significant burden due to factors such as rapid urbanization, population growth, and climate change, all of which contribute to the contamination of water sources and the proliferation of foodborne diseases [6]. Uganda's water supply and sanitation sector have experienced both progress and setbacks over the years. While access to improved water sources has increased, disparities remain, particularly in rural areas and informal settlements where sanitation services are either inadequate or entirely absent [7]. In Uganda, over 60% of the population relies on unimproved water sources, such as wells, surface water, and unprotected springs, which are highly susceptible to contamination [8]. Additionally, open defecation and poor waste management practices contribute to the spread of typhoid and

This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

other waterborne diseases. The country's water governance is managed by multiple agencies, including the Ministry of Water and Environment, the National Water and Sewerage Corporation (NWSC), and local governments. However, weak inter-agency coordination, insufficient funding, and limited enforcement mechanisms hinder the effective implementation of water safety regulations. Beyond infrastructure and policy challenges, public awareness and behavioral factors also play a significant role in disease transmission. Many households lack knowledge about proper water storage, food hygiene, and the importance of handwashing with soap [9]. Addressing these gaps requires a multi-faceted approach that combines policy improvements, infrastructure investments, and community engagement. Typhoid fever remains a persistent health threat in Uganda, despite efforts by the Ugandan government and international organizations to improve water and sanitation [2]. Factors contributing to the disease's prevalence include inadequate infrastructure, weak policy enforcement, limited public awareness, climate change and environmental factors, and rapid urbanization and population growth [10]. To address these challenges, an integrated approach is needed to enhance water and food safety governance, focusing on policy reforms, community engagement, and infrastructure development. The study aims to assess the governance of water and food safety in Uganda and its implications for typhoid prevention. The specific objectives include examining existing policies and regulatory frameworks, identifying key governance challenges that hinder effective implementation, evaluating the role of public awareness and community participation in typhoid prevention, and proposing governance improvements and policy recommendations aimed at reducing typhoid fever incidence. The significance of the study lies in its potential to contribute to public health improvement, policy development, community empowerment, and sustainable development. By identifying gaps in water and food safety governance, the study aims to reduce typhoid incidence and improve overall public health. Policymakers will gain evidence-based recommendations to strengthen regulatory frameworks and enforcement mechanisms, while understanding the role of public awareness and community participation will help design more effective education campaigns and behavioral interventions [11]. Ensuring safe water and sanitation aligns with Uganda's commitment to achieving Sustainable Development Goals 6 (Clean Water and Sanitation) and SDG 3 (Good Health and Well-being). Addressing typhoid fever requires a comprehensive approach that integrates policy reforms, community engagement, and infrastructure investments [12]. This study aims to provide insights into the current governance landscape and propose practical solutions to enhance water and food safety, ultimately contributing to better public health outcomes in Uganda.

Overview of Existing Policies on Water Quality, Sanitation, and Food Safety in Uganda

Uganda has a comprehensive set of policies and regulations aimed at ensuring access to clean and safe water, which is crucial for public health and environmental sustainability [5]. These include the National Water Policy (1999), the Water Act (Cap 152), and the National Water Quality Standards (UNBS). The Water Act promotes integrated water resources management (IWRM) and encourages public-private partnerships to enhance service delivery. The UNBS sets acceptable limits for contaminants in drinking water, ensuring compliance with World Health Organization guidelines and preventing waterborne diseases like cholera and typhoid. The National Water and Sewerage Corporation (NWSC) manages urban water supply and sanitation services, while the Directorate of Water Resources Management oversees water quality monitoring and enforcement. The National Sanitation Policy (2000) supports sustainable sanitation initiatives, such as community-led total sanitation (CLTS) programs, and promotes investment in sanitation facilities. The Uganda Vision 2040 aims to achieve universal access to sanitation by improving infrastructure, education, and governance in the sector, aligning with Sustainable Development Goal 6 (SDG) 6. However, challenges such as inadequate funding, rapid urbanization, and cultural practices continue to affect sanitation improvements in Uganda [13]. Strengthening enforcement mechanisms and investing in public awareness campaigns are essential to achieving national sanitation goals. Food safety is also crucial for public health, consumer protection, and economic development. Uganda has implemented various legal and regulatory frameworks to ensure food safety, prevent contamination, and promote best practices in food handling [14]. The Food and Drugs Act (Cap 278) governs food safety and hygiene, regulating the production, storage, and sale of food and beverages. The Uganda National Bureau of Standards (UNBS) Act is responsible for developing food safety standards and conducting inspections to ensure compliance with quality regulations [15]. Local government ordinances enforce specific hygiene regulations for markets, restaurants, and food vendors. Uganda participates in regional and international food safety initiatives, including the East African Community (EAC) Food Safety Act, which harmonizes food safety standards among member states to facilitate trade and consumer protection. However, challenges such as limited resources for inspection, informal food markets, and weak enforcement remain barriers to effective food safety management. Uganda's policies on water quality, sanitation, and food safety provide a strong foundation for public health and environmental protection. However, effective implementation requires enhanced regulatory enforcement, increased public awareness, and investment in infrastructure [16]. Strengthening inter-

agency collaboration and community engagement will be crucial in addressing ongoing challenges and achieving sustainable improvements in these critical sectors.

Strengthening Regulatory Enforcement and Compliance

Emphasizing on the necessity of enhancing Uganda's water quality, sanitation, and food safety framework. It proposes many measures to guarantee public health and environmental sustainability throughout the nation [17]. These encompass the establishment of a National Food and Water Safety Authority, the implementation of obligatory water quality monitoring in urban and rural areas, the augmentation of penalties for non-compliance, the expansion of public-private partnerships (PPPs), the promotion of private sector investments in safe water and sanitation infrastructure, the support of NGOs and community organisations in hygiene education and behavioural modification, the facilitation of technological innovations for vulnerable populations, and the enhancement of community-based interventions. The essay underscores the necessity of community involvement in guaranteeing the efficacy of water and food safety initiatives. Expanding Community-Led Total Sanitation (CLTS) initiatives can result in diminished open defecation, enhanced latrine building and utilisation, and heightened understanding of handwashing and hygiene practices [18]. Subsidies for domestic water treatment systems can address this deficiency, and compulsory training in food safety and hygiene should be mandated for vendors and restaurants. Accurate data collection and monitoring are crucial for tracking disease outbreaks, pinpointing high-risk regions, and executing targeted treatments. A nationwide typhoid monitoring system must be instituted to monitor typhoid cases in real-time, identify disease hotspots and high-risk groups, and deliver early warnings for outbreak prevention. Healthcare institutions must be outfitted with quick diagnostic instruments for typhoid detection, and data-sharing frameworks should be instituted across hospitals, laboratories, and governmental bodies. Employing Geographic Information System (GIS) technology for the distribution of water and sanitation resources enables policymakers to monitor water accessibility, sanitation coverage, and disease incidence across various regions [19]. Funding for research on typhoid preventive measures might be augmented to build evidence-based policies aimed at improving food and water safety. Enhancing Uganda's water quality, sanitation, and food safety framework necessitates a multifaceted strategy. Through the augmentation of regulatory enforcement, the expansion of public-private partnerships, the promotion of community-based initiatives, and the enhancement of disease surveillance, Uganda may mitigate waterborne diseases, elevate hygiene standards, and guarantee safer food consumption for all inhabitants. The successful execution of these measures will enhance public health outcomes and promote sustainable development.

CONCLUSION

Typhoid fever remains a significant public health challenge in Uganda, primarily due to inadequate water quality, poor sanitation, and weak food safety regulations. Despite the presence of policies and regulatory frameworks, gaps in enforcement, insufficient infrastructure, and limited public awareness hinder their effectiveness. Strengthening governance through more robust regulatory enforcement, increased investment in water and sanitation infrastructure, and enhanced inter-agency coordination is essential for mitigating the burden of typhoid. A multi-pronged approach that includes policy reforms, public-private partnerships, community engagement, and technological innovations can drive sustainable improvements. Enhancing surveillance systems, expanding hygiene education initiatives, and promoting behavioral change among communities will further strengthen disease prevention efforts. Addressing these governance challenges not only contributes to typhoid control but also aligns with Uganda's broader public health and sustainable development goals. Through coordinated and sustained action, Uganda can build a safer and healthier future, ensuring equitable access to clean water, improved sanitation, and safe food for all.

REFERENCES

1. Kim, C., Goucher, G.R., Tadesse, B.T., Lee, W., Abbas, K., Kim, J.-H.: Associations of water, sanitation, and hygiene with typhoid fever in case-control studies: a systematic review and meta-analysis. *BMC Infect Dis.* 23,562(2023). <https://doi.org/10.1186/s12879-023-08452-0>
2. Kabwama, S.N., Bulage, L., Nsubuga, F., Pande, G., Oguttu, D.W., Mafigiri, R., Kihembo, C., Kwesiga, B., Masiira, B., Okullo, A.E., Kajumbula, H., Matovu, J., Makumbi, I., Wetaka, M., Kasozi, S., Kyazze, S., Dahlke, M., Hughes, P., Sendagala, J.N., Musenero, M., Nabukenya, I., Hill, V.R., Mintz, E., Routh, J., Gómez, G., Bicknese, A., Zhu, B.-P.: A large and persistent outbreak of typhoid fever caused by consuming contaminated water and street-vended beverages: Kampala, Uganda, January – June 2015. *BMC Public Health.* 17, 23 (2017). <https://doi.org/10.1186/s12889-016-4002-0>
3. Alum, E. U., Obeagu, E. I., Ugwu, O. P. C. Curbing Diarrhea in Children below five years old: The sub-Saharan African Standpoint. *J. New Medical Innovations and Research.* 5(1) 3 (2024). DOI:10.31579/2767-7370/083

4. Murphy, J.L., Kahler, A.M., Nansubuga, I., Nanyunja, E.M., Kaplan, B., Jothikumar, N., Routh, J., Gómez, G.A., Mintz, E.D., Hill, V.R.: Environmental Survey of Drinking Water Sources in Kampala, Uganda, during a Typhoid Fever Outbreak. *Appl Environ Microbiol.* 83, e01706-17 (2017). <https://doi.org/10.1128/AEM.01706-17>
5. Agwu E. Distribution of Community acquired typhoid fever among febrile patients attending clinics in Bushenyi, Uganda: case study of the year 2005. *Journal of Medical Microbiology and Diagnosis*, 1, (101), 1-4 (2011).
6. Browne, A.J., Kashef Hamadani, B.H., Kumaran, E.A.P., Rao, P., Longbottom, J., Harriss, E., Moore, C.E., Dunachie, S., Basnyat, B., Baker, S., Lopez, A.D., Day, N.P.J., Hay, S.I., Dolecek, C.: Drug-resistant enteric fever worldwide, 1990 to 2018: a systematic review and meta-analysis. *BMC Medicine*. 18, 1 (2020). <https://doi.org/10.1186/s12916-019-1443-1>
7. Nakisuyi J, Bernis M, Ndamira A, Kayini V, Mulumba R, Theophilus P, Agwu E, Lule H. Prevalence and factors associated with malaria, typhoid, and co-infection among febrile children aged six months to twelve years at kampala international university teaching ... *Heliyon*, 9, (9), e19588 (2023).
8. Walekhwa, A.W., Ntaro, M., Kawungezi, P., Nimusiima, E., Achangwa, C., Musoke, D., Mulogo, E.M.: Water quality of improved water sources and associated factors in Kibuku District, Eastern Uganda. *Sustain. Water Resour. Manag.* 8, 50 (2022). <https://doi.org/10.1007/s40899-022-00604-5>
9. Okesanya, O.J., Atewologun, F., Lucero-Prisno, D.E., Adigun, O.A., Oso, T.A., Manirambona, E., Olabode, N.O., Eshun, G., Agboola, A.O., Okon, I.I.: Bridging the gap to malaria vaccination in Africa: Challenges and opportunities. *Journal of Medicine, Surgery, and Public Health*. 2, 100059 (2024). <https://doi.org/10.1016/j.glmedi.2024.100059>
10. Yu, P., Wei, Y., Ma, L., Wang, B., Yung, E.H.K., Chen, Y.: Urbanization and the urban critical zone. *Earth Critical Zone*. 1, 100011(2024). <https://doi.org/10.1016/j.ecz.2024.100011>
11. Chhetri, D., Zacarias, F.: Advocacy for Evidence-Based Policy-Making in Public Health: Experiences and the Way Forward. *Journal of Health Management*. 23, 85-94 (2021). <https://doi.org/10.1177/0972063421994948>
12. Bhutta, Z.A.: Integrating Typhoid Fever Within the Sustainable Development Goals: Pragmatism or Utopia? *Clin Infect Dis*. 68, S34-S41 (2019). <https://doi.org/10.1093/cid/ciy957>
13. Kwiringira, J., Kabumbuli, R., Zakumumpa, H., Mugisha, J., Akugizibwe, M., Ariho, P., Rujumba, J.: Re-conceptualizing sustainable urban sanitation in Uganda: why the roots of 'Slumification' must be dealt with. *BMC Public Health*. 21, (2021). <https://doi.org/10.1186/s12889-021-11029-8>
14. Achiro, E., Okidi, L., Echodu, R., Alarakol, S.P., Nassanga, P., Ongeng, D.: Status of food safety knowledge, attitude, and practices of caregivers of children in northern Uganda. *Food Sci Nutr*. 11, 5472-5491 (2023). <https://doi.org/10.1002/fsn3.3504>
15. Kungu, J.M., Ejobi, F., Okuyo, B.A., Namayanja, J., Namyalo, E., Meeme, R.: Animal Source Foods Quality and Safety Standards Implementation in Uganda. A Review, <https://www.researchsquare.com/article/rs-2727321/v1>, (2023)
16. George, T.E., Karatu, K., Edward, A.: An evaluation of the environmental impact assessment practice in Uganda: challenges and opportunities for achieving sustainable development. *Heliyon*. 6, e04758 (2020). <https://doi.org/10.1016/j.heliyon.2020.e04758>
17. Ugwu, O. P. C., Alum, E. U. and Uhama, K. C. Role of Phytochemical-Rich Foods in Mitigating Diarrhea among Diabetic Patients. *Research Invention Journal of Scientific and Experimental Sciences*. 3(1):45-55 (2024).
18. Okolimong, C.D., Ndejjo, R., Mugambe, R.K., Halage, A.A.: Effect of a Community-Led Total Sanitation Intervention on Sanitation and Hygiene in Pallisa District, Uganda. *Am J Trop Med Hyg*. 103, 1735-1741(2020). <https://doi.org/10.4269/ajtmh.19-0911>
19. Tsihrintzis, V.A., Hamid, R., Fuentes, H.R.: Use of Geographic Information Systems (GIS) in water resources: A review. *Water Resour Manage*. 10, 251-277 (1996). <https://doi.org/10.1007/BF00508896>

CITE AS: Obwendo N. J. (2025). Policy and Governance Approaches to Strengthen Water and Food Safety Regulations for Typhoid Control in Uganda. *Research Output Journal of Public Health and Medicine* 5(3):119-122. <https://doi.org/10.59298/ROJPHM/2025/53119122>